



1980
Feb

LAKEHEAD AMATEUR RADIO CLUB BULLETIN

DINNER MEETING ROYAL EDWARD HOTEL FEB 16

The next general meeting of the LARC will be the annual dinner meeting. It will take place at the Royal Edward Hotel, Windsor Room, on February 16. The symposium, will start at 7:00 pm and the dinner at 7:30. All full members, associate members and their wives are invited to attend this event. This is the saturday of the month and not the regular thursday that most meetings are held on. This gives no one an excuse for not attending. This will not be a business meeting, so you need not worry about being bored by routine matters for a time. It is hoped that guest speakers can be arranged for of interest to both the ham and XYL. See you at the bar.

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Volunteers are once again needed for the Cross Country ski race. This will take place on March 1. This is the same race that last year was cancelled because of the very heavy snow fall. Three operators with 2 meter rigs are required in the bush at the checkpoints of the race as well as 2 mobile operators on the road. This race two years ago had several hundred entries and our club provided much needed help in getting the participants home after they were stranded at the end of the race. The actual race takes place at Sibley Park. The starting point is usually at a campground outside the park perimeter and ends about 40 miles later past Lake Mary Louise. If you would like to help out in this project, call Bob Gilman VE3-KRL and you will have a good time.

To all of you computer buffs or prospective computer buffs. Fort William Collegiate will be holding an open house on February 13 at 7:00 p.m. The math and physics departments have gone computerized and will have their computers in operation during the open house. These include 2 PET 2001 terminals an H*8 and a H-10. Terminal Data processing centre line printing room plus several other gadgets.

The annual TIME OUT AWARD will be presented at the dinner meeting. Be sure to attendyou might be the winner.

JANUARY MEETING

Minutes of the January 10 general meeting as supplied by the secretary of the L.A.R.C.

Meeting commenced at 8:03 PM as called to order by the President Dennis VE3-JAQ, and the round table introductions followed.

Motion to accept minutes of the last meeting as printed in HI-Q, by Arnold VE3-JAA and seconded by Ed VE3-KRP.

Motion to accept the January financial report statement as read by the secretary, Ron VE3-KRJ, seconded by Bill VE3-KJ.

Correspondence: A letter from the residents of Dawson Court gave thanks for the help in handling the Xmas messages by the LARC.

A card from VE3-BWE in Red Lake with best wishes to the members of the club for 1989.

Old business: The Dinner Meeting. The president asked for some volunteers to help with the collecting of money for the dinner to be held on February 16. Volunteers were Stan VE3-KRN and VE3-EEW Tom.

With regard to the Xmas messages, the president asked for a report on the message handling. Bob VE3-IDJ reported 10 sent and 1 received. Dan VE3-KRO reported 20 sent, none received. NOTE: these are only partial figures.

Ham radio promotion booth: The president asked for volunteers to help in the setting of a Promotion Booth. This involved picking a mall, a date, and deciding exactly what is going to be set up. Volunteering were Vic VE3-JAR, Mike VE3-HZW, John VE3-HTM and Bob VE3-IDJ.

New Business: Regarding the Summer games, the president said that a letter was sent to the Summer Games Committee of Thunder Bay stating that the LARC would be willing to help out with any communications if they are needed. As yet there is no reply.

R.S.O. FILMS: A list of films pertaining to Radio and Electronics was sent to the club from the RSO. This was presented to the club and after a brief discussion the idea of ordering films to be viewed after the club meetings was accepted.

Bob VE3-JAB suggested that a committee be set up by the executive to keep a regular check-up on the blind amateur stations. After a thorough discussion, it was decided that a committee is not needed and the club can operate as a whole in this matter. Should any White Caners have any station problems, they can let it be known to the club and the matter be handled from there.

Motion to adjourn the meeting presented by Vic VE3-JAR and adjourned at 9:65 PM.

The next regular meeting is to be the ANNUAL DINNER MEETING at the Royal Elward Hotel, February 16.

DRAKE TR - 4 TVI PROBLEM. by J.H.McHaffey
submitted by Mike(ZG)

PROBLEM

Harmonic interference on TV channel 2 while operating on the 14 MHz band, and on channel 4 while operating on the 21 MHz band. Use of a low pass filter on the transmitter output and of high pass filters on the TV set reduced the problem, however additional steps were necessary for a complete cure.

CAUSE.

Strong interference on 2nd, 3rd, and 4th harmonic. The L.P. filter reduced the interference via the transmitter antenna.

A search loop and spectrum analyzer pinpointed the undesirable harmonics to the chassis. Further investigation indicated strong harmonics at the grids of the 6JB6 final amps. These unwanted signals passed through or around the 9MHz crystal filter.

CURE.

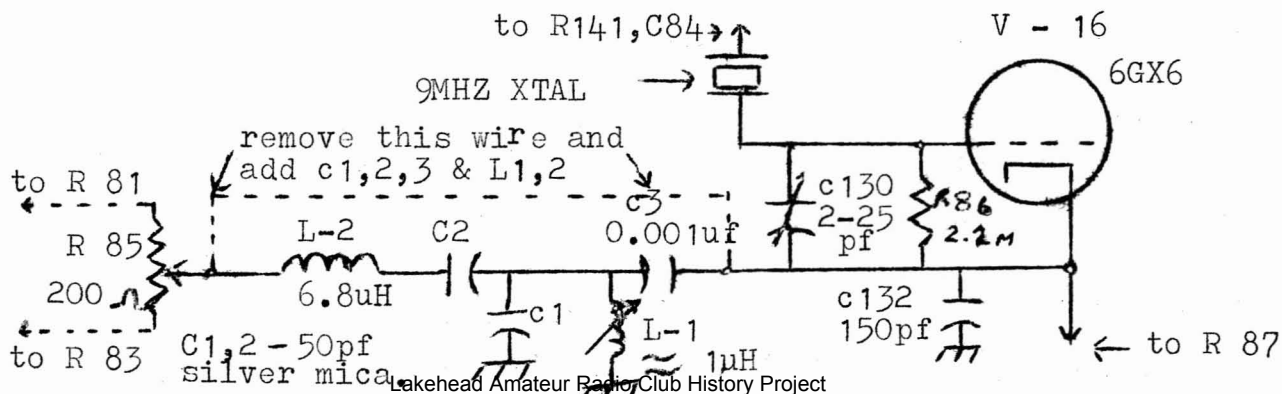
Adjust the amplifier for proper linearity using the following procedure.

Install a 9MHz parallel resonant circuit between the wiper of the carrier balance potentiometer and the cathode of V - 16. Tune this circuit to approx. 9 MHz using a grid dip oscillator. Connect a scope to the grids of the 6JB6 while tuning for maximum amplitude. Adjust the transmit gain pot to the linear region of operation (approx. 9 o'clock position) and realign the 9MHz oscillator as per the Drake manual. Remove the 470pf capacitor from pin 3 of the 6JB6 amplifier to linearize the final.

RESULTS.

Harmonic radiation is reduced as per the table below. Measurements were taken at the output connection.

| | f_0 | $2f_0$ | $3f_0$ | $4f_0$ |
|---------------------|-------------|--------|--------|--------|
| Before modification | 0 dB (ref.) | -38dB | -42dB | -43dB |
| After modification | 0 dB (ref.) | -55dB | -60dB | -60dB |



FEBRUARY HI -Q

The following information is reprinted from the RNARS (ROYAL NAVAL AMATEUR RADIO SOCIETY) spring 1979 issue. Thanks to John VE3EFA.

VE3EFA RNARS # 1248. John is a member of the Thunder Bay Amateur Radio Club and the Lakehead search and rescue (Emergency Callout). For a short while he was VE2BDM (59-60) in Quebec and before that a Radio Operator in the British Merchant Marine (47-54) and then at Portishead Radio and Wick W/T (54-57). After emigrating to VE he joined the RCNR He has served in HMCS STAR, Hamilton Ontario, GRIFFEN thunder Bay, Ont. PATRIOT, NADEW, AND KOOTENAY.

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JACK'S LAUNDRY. "Leave your clothes here, ladies, and spend the after - noon having a good time".

" The lake at Danson Park has been remarkably immune from drowning accidents. There have been a number of fatalities but very few accidents

* * * * *

"Hand your luggage in to us, We will send it in all directions!"

* * * * *

" For sale: Childs drum set and double barrel shotgun. Both used once only".

* * * * *

" Visibility is reported in yards up to 5000 meters"

Royal navy(Instrument Rating Handbook)

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A final note from the editors.

any odd spllinf mistakes in thid nedlttre can easilyn be explaimed by referring to anu standard typewritet keyboaed. Thaks what happens when you buy tjem wholesale.

Thanks again to John for the RNARS mag. Anyone else with outside news contact MIKE HZW or BOB IDJ. We are always looking for news etc. How about dropping a short note on your activities as per the above, someone just might find it interesting.

73, Bob VE3IDJ

D.O.C. NOTES

From the DOC comes word that a working arrangement has been concluded between the Federal Communications Commission and the Department of Communications to the effect that registration permits will not be required after JANUARY 21, 1980, for visiting amateurs who intend to temporarily operate their stations while visiting in the United States. This also applies for American visiting in Canada.

THE LATEST EXAMINATIONS

Four candidates attended the January 16 examinations at the local DOC office. Three making the first attempt at the Amateur Certificate and one for the Digital Certificate.

Two of three candidates passed both theory and regulations, and one passed theory only. All have their code to write yet. It will be some time before results on the Digital exam are known.

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TOWER PROBLEMS IN THE EAST

The following information was in the January 16 edition of the local paper datelined TORONTO.

It states that many homeowners are not able legally to put up towers for either TV or hobby. Restrictions, in deeds to most houses built in the last 15 to 20 years, make it possible for some homeowners with antennas to be sued by their neighbors, although there is some doubt whether the prohibitions will stand up in court.

Called a restrictive covenant, the prohibitions is a standard deed say: "no roof antenna or exterior tower antenna for either television of radio transmission or reception or other communications device shall be erected on the lands or on any building or structure thereon"

The restriction is binding on subsequent purchasers. Toronto cable companies used to pay land developers as much as \$200. a lot to place the restriction in the title so the buyer would subscribe to their service. Developers were receptive to the idea to they could assure prospective buyers there would be no antennas marring their view. Although the practice stopped several years ago the restrictions are still in effect as new developers try to prevent unsightly (to them) roof top antennas.

I could not get any information from anybody in Thunder Bay as to the restriction if any in this town. If you heard of any how about dropping us a line.

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Looking for more shelf space? Got no more use for that old tube rig? Maybe you are looking for a certain piece of gear. One way to get your information across is to list it in the pages of HI-Q. There is no charge of course and you are sure that it will be read by the amateurs in town.

BASIC DIGITAL

Hopefully this article will be the first in a series on BASIC digital theory, operation and circuits.

The articles will be directed to those who really don't know anything about the subject, so I would appreciate the patience of all you TECHNICIANS out there. I would also hope that feedback in the form of constructive criticism would be forthcoming, and I also leave the pages open for input and articles on particular aspects of the theory and circuits used. Your help in making this series of value will be appreciated.

INTRODUCTION.

Digital electronics has, in the past few years, entered into just about every aspect of living, from the digital alarm clock to the cash register in the grocery store. Digital devices or integrated circuits, are composed of anywhere from a very few transistors, diodes, resistors, etc to many hundred's, all on one silicon chip, and connected in such a way as to produce the many different digital devices on the market.

Many families of I.C.'s are on the market also, however the TTL or Transistor Transistor Logic type and the CMOS or Complimentary Metal Oxide Semiconductor type are the most common used in industry at the present time.

With conventional tube and transistor circuits many hours are normally spent checking voltage bias levels, analog signals etc, etc. With digital circuits concern is directed towards determining when and where the signal should be and if not at the proper location in the circuit then the troubleshooting procedure is directed to that specific device. This doesn't sound at first too much different from conventional circuits but as you will see there is quite a difference. In these circuits we will only be concerned with the level of voltage at the input and output of the specific circuit within the I.C. If any or all of the device is not working properly the entire device is replaced, including the parts which are operating OK. We are then concerned with the operating FUNCTION of the device.

The simplicity of Digital circuits results from the fact that it has only two possible modes of operation - either ON or OFF, often referred to as HIGH or LOW; TRUE or FALSE; " 1 " or " 0 ", respectively. One of the simplest of digital device is the common light switch, it is either ON or OFF. There are also many other types of common digital device although not normally considered as Digital in nature.

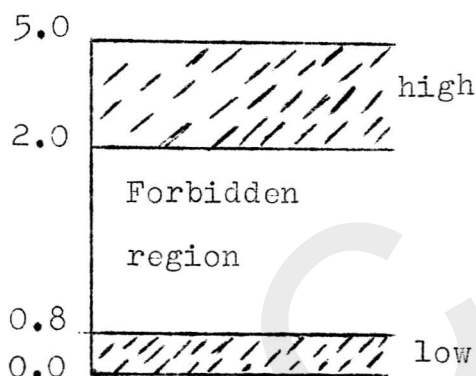
One form of LOGIC, referred to as POSITIVE logic, has the " ON " state represented by a 1, a HIGH, or a TRUE. The OFF state is then represented by a " 0 ", a LOW, or a FALSE.

Logic voltage levels to represent the above statements are many and varied, however one of the most common in use with TTL devices is +5 volts, DC.

..... Cont'd.

BASIC DIGITAL, cont'd.

With the 5 volt levels, a LOW or OFF state is defined as a voltage level between 0 and 0.8 volts. An ON or HIGH state is then represented by a voltage level between 2.0v and 5.0 volts. This means that the digital manufacturer will guarantee a LOW will output a 0 to 0.8 volts and a high will be output at 2.0 to 5.0 volts. The I.C. will also respond to the above voltage levels on its input. The area between 0.8 volts and 2.0 volts is the forbidden region and operation in this area is normally not permitted.



DIGITAL REPRESENTATION.

You will no doubt have seen many schematic diagrams representing digital components with various symbols used, and also many magazine articles showing TRUTH TABLES. Both forms of circuit representation are shown below.



AND Gate symbol

| inputs | | output |
|--------|---|--------|
| A | B | Y |
| L | L | L |
| L | H | L |
| H | L | L |
| H | H | H |

TRUTH TABLE

The symbol shows a 2 - input AND gate with one output Y. Any number of inputs may be designed into the AND gate with only one output. For the purposes of this article we will use the above 2 - input circuit. The truth describes in table form the relationship between the input voltage levels and the output, i.e. it shows a functional view of the AND gate.

If input A & B are both LOW (or off) the output Y will also be LOW (or off). Similariy if either of the inputs are LOW the output will still be LOW. Only when input A AND B are HIGH, (or on) will the output show a HIGH (or on) state, which is what we are looking for. Understand the use of the Truth Table as it is the key to understanding the FUNCTION of all Gates, and of course the operation of the circuit you are troubleshooting.

LARC